

Date: Tue, 16 Aug 94 04:30:35 PDT
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@UCSD.Edu
Reply-To: Ham-Space@UCSD.Edu
Precedence: Bulk
Subject: Ham-Space Digest V94 #227
To: Ham-Space

Ham-Space Digest Tue, 16 Aug 94 Volume 94 : Issue 227

Today's Topics:

 ANS-225 BULLETINS
 Homebrew Global Positioning System (GPS) (2 msgs)
 PERSEIDS emitting on HF

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Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Sun, 14 Aug 1994 11:28:10 MDT
From: ihnp4.ucsd.edu!agate!library.ucla.edu!psgrain!nntp.cs.ubc.ca!alberta!ve6mgs!
usernet@network.ucsd.edu
Subject: ANS-225 BULLETINS
To: ham-space@ucsd.edu

SB SAT @ AMSAT \$ANS-225.01
AMSAT-UK COLLOQUIUM REPORT #1

HR AMSAT NEWS SERVICE BULLETIN 225.01 FROM AMSAT HQ
SILVER SPRING, MD AUGUST 13, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-225.01

AMSAT-UK Colloquium Report: Part 1

AMSAT-UK's annual Colloquium was held at the University of Surrey between
28th to 31st July 1994; over 133 people came from 22 countries in five
continents to attend this Colloquium.

The University of Surrey personnel gave several talks about their equipment and the science they are conducting. Noteworthy points about their thinking include: low-cost propulsion (hybrid motors); mini-sats (up to 200 Kg) rather than MICROSATs; higher data rates; use of S-band; GTO, or modified GTO orbits; spread spectrum. One of their approaches to building less expensive satellites was the subject of one paper. It involves the use of commercial grade battery cells. A single space qualified NiCd cell costs about \$4000. Surrey buys commercial cells for about \$12 each and qualifies them for space use in house, with a resultant cost per cell of less than \$1000.

Doug Loughmiller spoke about the S-band beacon on UO-11 which has been switched on for a considerable time; but he has had no reports on it, and appealed for folks to let him know if they hear the beacon, or even if they listened but could not hear it.

Doug also provided an explanation of some of the more obscure codes seen on-screen from UO-22:

F: available space in program memory
L: largest free part of ---'---
TST: transputer status
d: digipeater (0=off)
B: bytes transmitted
Uptime: lifetime of current operations (Days/hours/minutes)
SPIN: 10.1K12G3.2 = 10.1 seconds for one revolution; earth magnetic field model 12; gamma angle (largest offpoint of libration since midnight) 3.2 deg

Ray Soifer W2RS gave a presentation regarding the US Government's intention to "sell" parts of the 2400 MHz band. Concern was expressed by many of the attendees with respect to any such attempt.

James Miller, G3RUH, gave a resume of AO-13's status. He pointed out that, since the proton event of May 13th, EDAC counts have been consistently higher than previously. He stressed, however, that AO-13 should continue working up to re-entry. Nevertheless, the effects of drag, once perigee starts to get quite low, are uncertain.

Gerard Auvray, F6FA0, talked about ARSENE which has now been abandoned. He said that the cable between 2M the equipment and antenna was changed just before launch. The suspicion is that a connector was not tightened properly. He also said that there is a new plan, involving a four to five year time-scale, to build a "micro-sat" carrying a Mode 1/S linear transponder, this time using the low end of the 2.4 GHz band. A camera may also be incorporated.

A representative from AMSAT-OZ gave a presentation about their replacement

for the Kansas City Tracker. The software takes four bits from an IBM PC parallel port and controls the rotors via opto-couplers. It was said that the cost to build is about \$20 to \$25. The device works on an open loop principle whereby positioning is determined by knowing the time it takes for the rotor to move a specified distance. One can re-calibrate this by moving the rotor to its stop. It was admitted that this approach is not as precise as the Kansas City tracker and similar devices, but it is acceptable for antenna beamwidths greater than about 20 degrees. The program can also use a tracking table. AMSAT-OZ will be supplying these to AMSAT-UK for international distribution with profits going to AMSAT-UK's Phase-3D fund. AMSAT-UK will make an announcement once stocks are to hand.

[The AMSAT News Service would like to thank Richard Limebear (G3RWL) and Ray Soifer (W2RS) for their help in preparing this bulletin item.]

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SB SAT @ AMSAT \$ANS-225.02
AMSAT-UK COLLOQUIUM REPORT #2

HR AMSAT NEWS SERVICE BULLETIN 225.02 FROM AMSAT HQ
SILVER SPRING, MD AUGUST 13, 1994
TO ALL RADIO AMATEURS BT
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AMSAT-UK Colloquium Report: Part 2

Phase-3D papers were presented by Keith Baker KB1SF, Peter Guelzow DB20S, Karl Meiner DJ4ZC (read by DB20S), Mike Dorsett G6GEJ and Hans van de Groenendaal ZS5ALE. KB1SF's talk concentrated on the work going on here in the U.S. with emphasis on current progress in getting the spaceframe, now at the Orlando Integration Facility, ready to receive modules. Peter Guelzow's paper dealt with the electronic modules to be included on the satellite, especially the RF equipment.

Future ANS bulletins will carry additional details regarding the Phase 3D subjects presented.

Other Future Spacecraft

Several new satellite projects were announced. One is a non-Amateur spacecraft for the Chilean Air Force called FASAT.

Sias Mostert, ZR1MS, of the University of Stellenbosch, presented a paper on a South African satellite called "SunSat". It measures 45 x 45 x 40 cm and weighs 50 Kg. Current plans call for its launch in January 1996 on a U.S. Air Force Delta mission into eccentric polar orbit measuring 400 by 800 km with a period of 100 minutes. In addition to the usual VHF/UHF

(Mode u/v) communications at 1200 and 9600 bps, SunSat is said to have a capability for Mode 1/s. The 2401 MHz transmitter is expected to have five watts output and use QPSK modulation and have capability for a 40 Mbps wideband digital downlink intended to transmit video images. It was noted that sufficient bandwidth for experiments such as this is not likely to be available in the 2.4 GHz band if the U.S. NTIA/FCC proposals, currently being discussed, are adopted. The spacecraft will have a conventional power system, reaction-wheel attitude control, and 64 Megabits of RAM for its 80188, 80386 computers and T-800 transputer. The imager payload will consist of a linear array CCD camera producing 8000 pixels in a moving swathe. A resolution of 50 meters per pixel is expected.

[The AMSAT News Service would like to thank Richard Limebear (G3RWL) and Ray Soifer (W2RS) for their help in preparing this bulletin item.]

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SB SAT @ AMSAT \$ANS-225.03
AMSAT-UK COLLOQUIUM REPORT #3

HR AMSAT NEWS SERVICE BULLETIN 225.03 FROM AMSAT HQ
SILVER SPRING, MD AUGUST 13, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-225.03

AMSAT-UK Colloquium Report, Part 3: International Satellite Issues

The International Satellite Meeting was chaired by G3AAJ and convened at Thursday evening. A consensus was reached regarding the relationship between the international satellite community and the IARU. This was reflected in a resolution, which reads as follows:

INTERNATIONAL SATELLITE MEETING

INTRODUCTION

The International meeting of the AMSAT Groups hosted by AMSAT-UK at the University of Surrey on 28 July, 1994 expressed concern about the manner in which the services of the IARU Satellite Coordinator were terminated.

It was resolved that:

1. The IARU Administrative Council be urged to create the following positions:
 - IARU SATELLITE LIAISON OFFICER
 - IARU SATELLITE COORDINATOR

2. The Satellite Coordinator be appointed by the IARU Administrative Council on recommendation of the above mentioned International meeting.
3. The Satellite Liaison officer be appointed by the IARU Administrative Council.
4. The IARU Satellite Coordinator reports to the IARU Satellite Liaison Officer and that he shall be re-imbursed reasonable expenses in accordance with established procedures.
5. It is the express task of the IARU Satellite Coordinator to work closely with AMSAT groups as per terms of reference.
6. The meeting recommends that Freddy de Guchteneire ON6UG be appointed to the position of IARU Satellite Coordinator. Such as appointment to be made by the IARU Administrative Council at the September 1994 meeting.

R.J.C. Broadbent, G3AAJ
Chairman of the International Meeting

It was reported on Friday afternoon that ON6UG, who was not present at the meeting, but he had been contacted by telephone and was in agreement with the meeting's recommendation.

It was decided that, if the satellite's owners agree, POSAT should no longer be referred to as OSCAR 28 since it has been withdrawn from amateur use, but that the number 28 shall be reserved in case POSAT is returned to amateur use in the future.

On Sunday afternoon, Ivan, OZ7IS, chairman of the IARU Region 1 VHF Committee, reported on the Committee's "lengthy discussion" concerning SAREX and MIR. The Committee decided to recommend that, if possible, the downlink be moved to 145.80 and a European voice uplink be introduced at 145.20. The problem is mainly one of terrestrial QRM to the downlink due to the heavy use of 145.55 in Europe for FM simplex operation. The recommendation has been conveyed to the SAREX Working Group.

At the end of the Colloquium the award for the best paper went to James Miller G3RUH (AO-13) and second place went to Leonid Labutin UA3CR (SAREX in Moscow).

This having been the ninth and final Colloquium that Ron Broadbent G3AAJ has organized, Ron was thanked by one and all for his superb performance over the years. Next year's Colloquium, to be organized by Doug Loughmiller G0SYX, will be held 26-29 July 1995.

[The AMSAT News Service would like to thank Richard Limebear (G3RWL) and Ray Soifer (W2RS) for their help in preparing this bulletin item.]

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SB SAT @ AMSAT \$ANS-225.04
WEEKLY OSCAR STATUS REPORTS

HR AMSAT NEWS SERVICE BULLETIN 225.04 FROM AMSAT HQ
SILVER SPRING, MD AUGUST 13, 1994
TO ALL RADIO AMATEURS BT
BID: \$ANS-225.04

Weekly OSCAR Status Reports: 13-AUG-94

A0-13: Current Transponder Operating Schedule:

M QST *** A0-13 TRANSPONDER SCHEDULE *** 1994 Jul 11 - Sep 12

Mode-B : MA 0 to MA 90 | Omnis : MA 230 to MA 30

Mode-BS : MA 90 to MA 120 |

Mode-S : MA 120 to MA 122 |<- S beacon only

Mode-S : MA 122 to MA 145 |<- S transponder; B trsp. is OFF

Mode-S : MA 145 to MA 150 |<- S beacon only

Mode-BS : MA 150 to MA 180 | Blon/Blat 180/0

Mode-B : MA 180 to MA 256 | Move to attitude 230/0, Sep 12

=====

N QST *** A0-13 TRANSPONDER SCHEDULE *** 1994 Sep 12 - Dec 19

Mode-B : MA 30 to MA 150 |<- OFF Oct 22 - Nov 07 for eclipses

Mode-B : MA 150 to MA 190 | max duration 2h 12m

Mode-BS : MA 190 to MA 218 |

Mode-S : MA 218 to MA 220 |<- S beacon only

Mode-S : MA 220 to MA 230 |<- S transponder; B trsp. is OFF

Mode-B : MA 230 to MA 30 | Alon/Alat 230/0

Omnis : MA 250 to MA 140 | Move to attitude 180/0, Dec 19

The battery charge state is of paramount importance during the eclipse seasons. As always the command team may have to have to make temporary changes to the published schedule. In that case we will try to minimize the inconvenience, setting Mode-B OFF from MA 230-256 in the first instance.

=====

[G3RUH/DB20S/VK5AGR]

RS-10: A couple of weeks ago WC9C pointed out that RS-10's 10M downlink signals were sounding quite weak in comparison to a few months about. G3IOR thinks that the problem of weaker distant and stronger distant signals from RS-10 attributed by WC9C to the parent satellites attitude is due more to path attenuation. In the summer we have spread "E" layer levels of far higher intensity. At low angles of incidence, i.e. when the satellite is close to horizon, the path through these attenuating layers is extended, thus producing a much weaker signal, more than can be accounted for by the inverse square rule. When the satellite is close to overhead, the path is minimal, and also far less refraction, reflection

and absorption results. RS-10 antenna is close to omni-directional, with only the odd end-on tip effect momentarily reducing the downlink level during it's slow rotation. At night, when the ionization is markedly reduced, signals are nominal. [G3IOR @ GB7VLS]

A0-16: A0-16 is going strong with no problems. [WH6I]

L0-19: L0-19 still seems have its BBS turned off. [WH6I]

I0-27: WH6I still has not heard anything from I0-26 and is afraid that it might stay that way permanently. [WH6I]

A0-16: Still going strong and very doing well. There is some gateway traffic on A0-16 but not enough to present any problem to other users and the file lifetime on the bird is still quite long. [WH6I]

K0-23: Since yesterday K0-23 seems to be down. Yesterday the 9600 baud signal sounded normal, but there was no data on it. Today the signal sounds abnormal. N4NR also reports that K0-23 is in a mode that leaves TNCs and DSPs locked up until a cold reset at the groundstation after the pass is over. Signal strength is good, however. [WH6I & N4NR]

The AMSAT NEWS Service (ANS) is looking for volunteers to contribute weekly OSCAR status reports. If you have a favorite OSCAR which you work on a regular basis and would like to contribute to this bulletin, please send your observations to WD0HHU at his CompuServe address of 70524,2272, on INTERNET at wd0hhu@amsat.org, or to his local packet BBS in the Denver, CO area, WD0HHU @ N0QCU. Also, if you find that the current set of orbital elements are not generating the correct AOS/LOS times at your QTH, PLEASE INCLUDE THAT INFORMATION AS WELL. The information you provide will be of value to all OSCAR enthusiasts.

/EX

Date: Mon, 15 Aug 1994 00:54:02 +0000
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!pipex!demon!myth.demon.co.uk!
zeus@network.ucsd.edu
Subject: Homebrew Global Positioning System (GPS)
To: ham-space@ucsd.edu

In article <32bqoe\$ur@eis.calstate.edu>
wmoyes@eis.calstate.edu "William A Moyes" writes:

> I need information for a homebrew GPS (Global Positioning
> System). Books, magazines, references, and internet resources
> would be extremely helpful. I need information on theory,

> frequencies and modulation, and circuit schematics.

Telephone GEC Plessey semiconductors on (408) 438 2900 and ask them about availability of the GP1010 and GP1020 ICs and GP1010 evaluation board. The GP1010 is a receiver on a chip (just add clock and sprinkle lightly with passives) the GP1020 is a correlator that decodes the spread spectrum signal. You will need to design and build your own interface to your development PC of whatever though.

As for information about signal structure etcetera, go to your library and look for anything by J.J.Spilker, issues of GPS world and (unlikely in the US) copies of Electronics World (UK publication) for about 18 months ago. If you can get the annual report from the Institute of Navigation (ION) so much the better. An excellent introduction to GPSs. As for GPS resources, well, there is a GPS UseNet group (can't recall off hand exactly what), but that is mainly uses of GPS and reviews/opinions of particular devices.

Mike.

--

Michael S. Cowgill (Mike) _ My opinions! MINEMINEALLMINEHAHAHAHA!
zeus@myth.demon.co.uk (That's me) _ " Swirly thing alert! "
G1VOX@GB7WRG.GBR.EU 44.131.2.76 _ " ...Cracking toast Gromit!... "

Date: 12 Aug 1994 11:55:58 GMT
From: usc!cs.utexas.edu!convex!news.duke.edu!eff!news.kei.com!
travelers.mail.cornell.edu!newsstand.cit.cornell.edu!news.graphics.cornell.edu!
ghost.dsi.unimi.it!univ-lyon1.fr!@ihnp4.ucsd.edu
Subject: Homebrew Global Positioning System (GPS)
To: ham-space@ucsd.edu

Hi William

Try the european "VHF communication" magazine; they are beginning a serie of papers about a homebrew GPS

Hope this will be useful
73 de F1G0C (mike)

Date: 14 Aug 1994 19:06:10 GMT
From: lll-winken.llnl.gov!uwm.edu!spool.mu.edu!howland.reston.ans.net!pipex!sunic!
trane.uninett.no!eunet.no!nuug!EU.net!ieunet!iol!ai@ames.arpa

Subject: PERSEIDS emitting on HF
To: ham-space@ucsd.edu

Alan Lyday (alan.lyday@aquila.com) wrote:

: AI> What's the best frequency (and any tips) to hear Perseid meteors on
: AI> receivers?

: Hello David, Well during some if not most of the Meteor events here in
: the States I've used the FM Broadcast band 88-108 Mhz and Tune in
: stations that are over the Horizon. As for HF Frequencys during the
: major Meteor Events like the Perseid's Ive also detected Propagation
: Beacons on the 10 Meter band 28.2-28.3 these are almost always low power
: simple antennas. With these if the Band is dead You can sometimes hear
: them Ping out of the Noise for as long as several Minutes. GL.
: * RM 1.3 00559 * RoboMail -- The ultimate QWK compatible message manager.

Around 5 or 6 MHz we hear a 1second or shorter duration 'chirp' that we
assume is actually emmision from the meteor track.

Is it something else?

Everyone else seems to be talking about hearing over the horizon stations
rather than picking up emmission direct from meteors.

--

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End of Ham-Space Digest V94 #227
